

Carex splendentissima (Cyperaceae), a New Species from Korea

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Carex splendentissima U. Kang & J. M. Chung, a new species of *Carex* L. sect. *Siderostictae* Franch. ex Ohwi (Cyperaceae) from Korea is described and illustrated. This species is closely related to other members of the section, but distinguished from *C. ciliatomarginata* Nakai by glabrous leaf surface with eciliate margins, glabrous culms and perigynia, and central position of reproductive culms on previous shoot, and from *C. siderosticta* Hance by central position of reproductive culms and staminate terminal spikes. *Carex splendentissima* is also distinguished from *C. okamotoi* Ohwi by wider leaves, color of adaxial leaf surface, and thicker rhizomes, from *C. pachygyna* Franch. & Sav. by androgynous terminal spikes, and 2–3 globose spikes per node. The habitat of *Carex splendentissima* is humid surfaces of limestone rocks near streams of deciduous forest margins, which is possibly an example of niche specification and adaptation of *Carex* species.

Key words: *Carex splendentissima*, Cyperaceae, Korea, new species, niche specification, sect. *Siderostictae*.

In Korea 145 species of *Carex* L. have been recorded in various habitats (Lee 1980). Korean sedges are notable in many cases in terms of distribution patterns since many populations are marginal in their species ranges, to which much attention should be given for both biogeographic and conservation aspects.

Carex sect. *Siderostictae* Franch. ex Ohwi is considered a primitive group by several authors (Egorova 1999, Waterway et al. 2009). It is well represented in East Asia, specially in Korea, China, and Japan. In Korea, three species including one endemic species (*C. okamotoi* Ohwi) have been recorded. Four species have been recorded in Japan including two endemic species (Ohwi 1936) and six species occur in

China (Liang et al. 2000). Within the section, *C. siderosticta* Hance is widely distributed throughout the whole region including the Far Eastern part of Russia, while *C. ciliatomarginata* Nakai is distributed in the relatively southern part of the region. The new species was observed in 2008 during field survey in our research site and collected in 2011 with living plants. It resembles *C. ciliatomarginata*, but in close comparison several morphological characters make this plant distinct from other species as a new taxon.

Carex splendentissima U. Kang & J. M. Chung, sp. nov. [Figs. 1–3]

Type: SOUTH KOREA. Gangwon: Jeongseon, Deuksanki valley, alt. ca. 300 m, 4

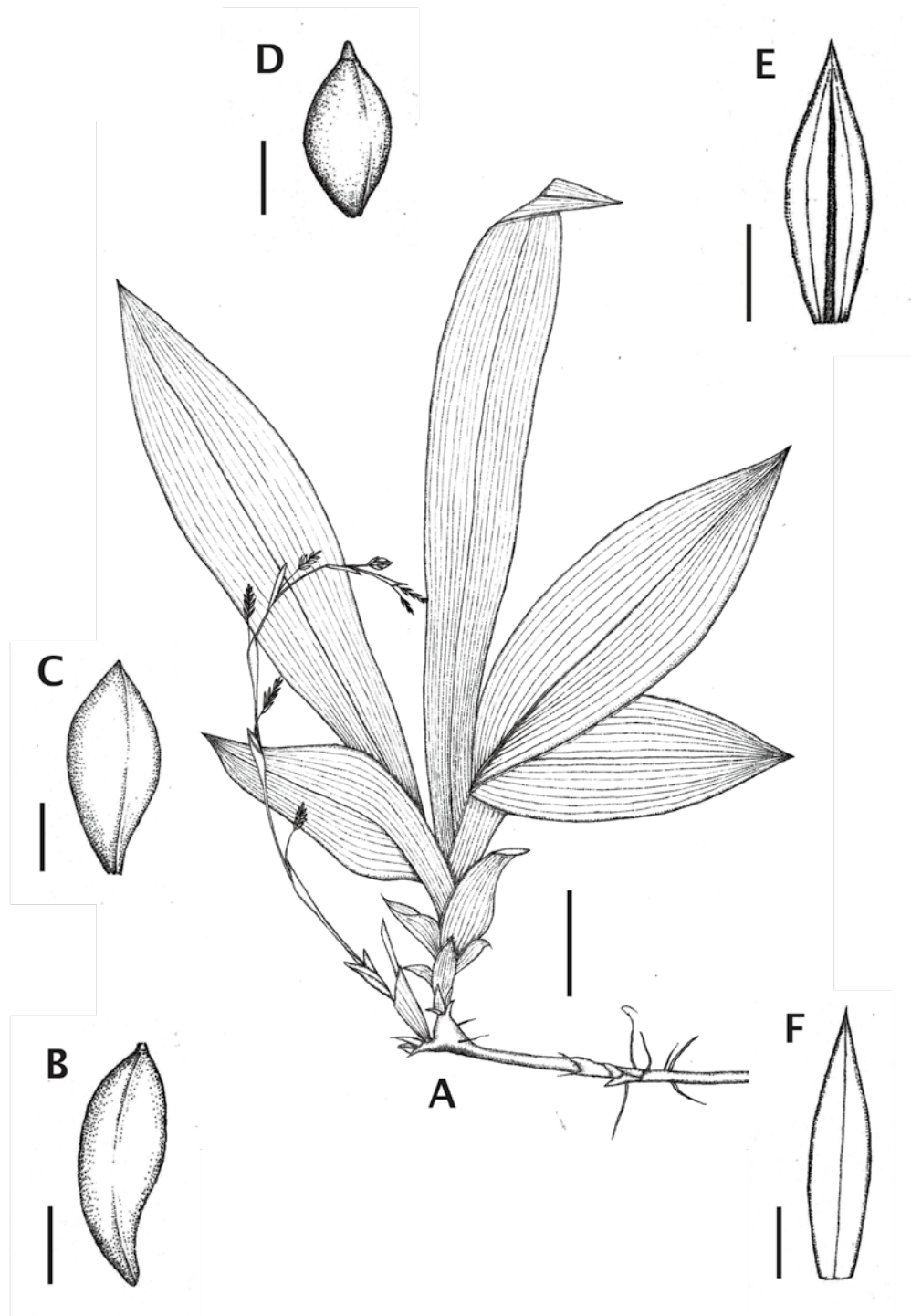


Fig. 1. *Carex splendidissima* U. Kang & J. M. Chung. A. plant habit. B, C. Perigynium. D. Nut scale. E. Pistillate scale. F. Staminate scale. Scale = 3 cm (a) and 1 mm (b–f).



Fig. 2. Holotype of *Carex splendensissima*.

June 2011, U. Kang 4290 (holotype-KH; Fig. 2).

Affinis *Carici ciliatomarginatae*, sed diversa est; plantae glabrae et lobustae, folliis valde grandioribus (10–24 cm longa, 1.4–4.6 cm lata), marginibus eciliatis, supra glabris pallide viridibus splendensibus, culmis glabris per totam longitudinem vulgo solitaris centralibus e ramo annotino evolutis, utriculis glabris.

Perennial, forming loose clump with long creeping rhizomes. Rhizomes horizontal, 2–8 cm long between shoots, 3–4 mm thick, covered with scales when young. Shoot bases purplish pink, bladeless sheaths conspicuous. Leaves broad to narrow oblanceolate or linear obovate, 10–24 cm long, 1.4–4.6 cm wide, pale green, thick chartaceous. Abaxial surface glabrous, shiny when fresh. Adaxial surface very sparsely pilose on prominent veins only. Reproductive culms 14–20 cm tall, solitary on central (rarely lateral) position of previous year's shoot, glabrous, aphyllopodic, obliquely triquetrous, flattened and darkened in drying, drooping at maturity. Bracts 1.0–1.8 cm long, tubular, sheath like, bladeless, upper 1/3–1/2 truncated and tapering into acute tip becoming spathaceous, hyaline at margins. Terminal spike staminate, ovate, 4.6–5.2 mm long, 2.0–2.4 mm wide, peduncles 0.8–1.8 cm long. Lateral spikes 4–6, androgynous, 0.6–1.4 cm long, exerted from sheath, peduncles 1–2 cm long, pistillate flowers (1–)2–8(–9) per spike, distant, the internodes between spikes 1.5–5.0 cm long. Staminate scales 4.6–5.2 mm long, 2.0–2.4 mm wide, obtuse or acute, glabrous, yellowish brown. Pistillate scales 2.8–3.2 mm long, 1.0–1.4 mm wide, acute, glabrous, yellowish brown, 3-nerved. Perigynia 2.8–3.2 mm long with 0.5–1.0 mm long stipe, 1.0–1.2 mm wide, not exceeding scales, obtusely triangular, narrowly elliptic or elliptic, gradually tapered to base and apex from widest point, glabrous, green with yellowish brown tint, brownish dotted, submembranous, ascending; beak very short (less than 0.2 mm long), orifice entire; nerves

1–3 on each side, prominent, reaching half of the length of perigynia. Achenes 2.0–2.2 mm long, 1.2–1.4 mm wide, tightly enveloped by perigynia, gradually tapered to base and apex, short (0.2 mm) appendage at the apex jointed with the short style. Rachilla 0.6–1.0 mm long, lanceolate, whitish. Style 4.5 mm long, 3-lobed.

Distribution and habitat: *Carex splendentissima* has been known from the type locality in Jeongsen-gun, Gangwon Province, central Korea and an additional small population in Pyeongchang-gun, Gangwon Province. This species was observed to grow on the humid surface of limestone rocks near streams. Populations of small numbers of plants are distributed profusely along streams which run through deciduous forest covering slopes of limestone hills.

IUCN Red List Category: *Carex splendentissima* appears to show very limited distribution, but here we assessed as Data Deficient (DD) of IUCN Red List criteria (IUCN 2001) since more information should be sought for accurate and appropriate consideration.

Korean name: Bandeul-daesacho (반들대사초).

Note: *Carex splendentissima* resembles *C. ciliatomarginata* at first glance, but in close comparison it is apparent that the former is distinguished by having glabrous reproductive culms and perigynia, being glabrous on abaxial surface of leaves lacking ciliate margins. In contrast, *C. ciliatomarginata* is a hairy species having hairy reproductive culms and perigynia, pubescent leaf blades with ciliate margins, which also make this species distinct from other members of the section in Korea, *C. siderosticta* and *C. okamotoi*. *Carex splendentissima* has a single reproductive culm that is always in the apical position of previous year's shoot base. *Carex ciliatomarginata* and *C. siderosticta*, however, have several reproductive culms that are lateral, i.e., exerted from the leaf sheaths. Terminal spike of *C. splendentissima* is staminate, but that of *C. siderosticta* is



Fig. 3. Habit of *Carex splendidissima* U. Kang & J. M. Chung. Cultivated at Korea National Arboretum, Pocheon, Gyeonggi, South Korea.

androgynous. Leaves of *C. splendentissima* are relatively wider (1.4–4.6 cm) than other species, specially than *C. okamotoi* (4–7 mm, usually less than 1 cm). In *C. okamotoi*, the leaf adaxial surface is whitish and rhizome thickness is 0.8–1.5 mm, by which *C. splendentissima* is easily distinguished. In the Japanese endemic species *C. pachygyna* Franch. & Sav. spikes are androgynous including the terminal one and globose, 2–3 per node of reproductive culms (Ohwi 1936), by which *C. splendentissima* is also well distinguished. *Carex splendentissima* is also distinctive in its relatively well preserved rachilla (0.6–1.0 mm long), thickness of rhizomes (3–4 mm thick), and more vigorous habits and glossy leaf surfaces. The rhizome of *C. splendentissima* does not necessarily grow under the ground, rather it is often creeping like its close relative, *C. ciliatmarginata*. In contrast, rhizomes of *C. siderosticta* and *C. okamotoi* grow under the ground (Kang et al. pers. obs.).

Carex splendentissima is observed to grow near streams, this suggests the species is dependent on high water availability. The preference of humid sites for colonization is often observed in *C. ciliatmarginata* while *C. siderosticta* occupies a rather mesic environment and *C. okamotoi* grows in relatively drier sites in

forests. This type of habitat specialisation among different species within the same section can further give a good example of understanding speciation, evolution, and distribution of sedges (Kang et al. unpubl. data). Based upon our field observations and morphological characters we include *C. splendentissima* in sect. *Siderostictae* with no doubt.

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姜 佑昌^a, 鄭 載珉^a, 季 康俠^a, 鄭 承善^a, 金 鎮奭^b: 韓国産スゲ属 (カヤツリグサ科) の1新種

韓国からスゲ属タガネソウ節 *Carex* L. sect. *Siderostictae* Franch. ex Ohwi (カヤツリグサ科) の1新種, *Carex splendentissima* U. Kang & J. M. Chung を記載した. 本種はケタガネソウ *C. ciliatmarginata* Nakai からは, 葉の下面が無毛でかつ縁毛を欠き, 茎や果胞が無毛であること, 単一の有花茎が前年のシュート基部から頂生することで, タガネソウ *C. siderosticta* Hance からは有花茎の出方と頂生小穂が雄性であることで区別される. また, チイサンタガネソウ *C. okamotoi* Ohwi は葉の幅がより広いこと, 葉の向軸

面が白色で, 根茎がより太いこと, ササノハスゲ *C. pachygyna* Franch. & Sav. は頂生花序が雌雄性であり, 球状の小穂を節当たり 2–3 個付けることで本種と区別される. *Carex splendentissima* は日当たりの良い夏緑林の縁で水の流れに近い, 湿り気を帯びた石灰岩上に生える. これはスゲ属における, 種のニッチェ特殊化や適応の一例と考えられる.

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